Discussion of :
Jannika Hesse, Claus Puhr, Martin Schneider , 2021, A structural corporate insolvency model to predict sectoral Austrian insolvencies amid the COVID-19 pandemic and beyond. ONB working paper

By

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Agenda of the presentation

1. Motivation of the study

2. Related literature

3. Hypotheses

4. Methodology and data

5. Results

6. Conclusions

1. Motivation

- The paper employs a novel modeling approach to predict sectoral insolvency rates based on simulated firm-level data in Austria

- This model builds on data for nonfinancial incorporated Austrian enterprises available from the BACH and SABINA databases. <u>Since only two firm-level variables (equity ratio, cash and bank) are available at sufficient coverage, the paper generates a hypothetical firm-level dataset for 17 NACE-1 sectors by using a Monte Carlo simulation</u>

- The merit of this novel approach lies less in the calculated sectoral insolvency rates themselves, but in the model's capacity to compare and rank the efficiency and efficacy of various mitigating measures implemented in the light of the COVID-19 pandemic.

- The model is expected to be applied beyond the COVID-19 pandemic.

2. Related literature

This paper refers to some 8 papers (reports, working papers), mostly simulating the solvency / liquidity of non-financial firms.

These studies include following topic / countries / data / time horizons / database:

- De Vito and Gomez (2020): liquidity of listed firms; simulate the role of tax deferrals and bridge loans in liquidity; 26 countries , consolidated data, listed companies, data for the <u>fiscal year of 2018</u>, Compustat Global and North America databases

- Guerini et al. (2020): simulate the COVID-19 impact on corporate solvency (and liquidity); 1 milion of French companies, data from 2017; FARE database

- Schivardi and Romano (2020): use the sectoral predictions of sales growth to determine the number of illiquid firms; Italy; Orbis database

- Carletti et al. (2020): simulate impact of pandemic on firms' net worth; 80,000 Italian firms; Orbis database;

- Gourinchas et al. (2020): estimate the COVID-19 impact on business failures among small and medium-sized enterprises (SMEs) in 17 countries, firm-level data; Orbis database;

- Gourinchas et al. (2021): simulate the potential for delayed insolvencies arising from expiring mitigating measures; additional 13 countries; firm-level data; Orbis database;

- Ebeke et al. (2021): simulate corporate bankruptcies, assess mitigating measure effectiveness; 26 European countries; firm-level data of 4.5 million non-financial firms; up to year end 2020; Orbis database

COMMENT: What is the link of this literature with the study? Add more precise and comparable information about the papers;

In your literatue review we have papers which directly measure (simulate the impact of Covid-19 on) the solvency (insolevency rates); liquidity (illiquidity rates); business failures; as well as simulate the role of mitigating measures

3. Hypotheses

- What is the expectation of the study?

- It would streamline the analysis if add some theses / hypotheses

- Maybe you expect that the use of mitigating measures reduced the insolvency rates?

4. Methodology

Data

1. firm-level dataset for nonfinancial incorporated Austrian enterprises with 18 firm-specific variables for 17 NACE-1 sectors.

2. the BACH and SABINA databases to construct this dataset; SABINA database contains firm-level accounting data compiled by Bureau van Dijk for more than 130,000 Austrian firms;

3. authors draw on firm-level data that are available in the SABINA database for more than 110,000 firms.

4. **only two variables are available at the firm-level (equity ratio, cash and bank)** to a sufficient extent in the SABINA database; authors generate a hypothetical firm-level dataset.

STEPs applied to generate a hypothetical firm-level dataset:

1. simulation of a firm-level dataset for six core variables (equity ratio, cash and bank, current assets, current liabilities, total income, total expenses) by means of a Monte Carlo method;

2. calculation of other variables (Balance-sheet: financial assets, current bank debt; P&L statement: financial income; cost of inputs; external output; staff costs; operating charges; Depreciation; interest expenses; tax) as shares of the simulated variables on a sectoral basis.

3. Data on current assets, current liabilities, total income, total expenses - the BACH database

COMMENT:

Confusion created by the information on data compilation – p. 5, 6 and data presented in Table A1. The impression is that almost all variables come from the BACH database. What is the start date (time horizon of the dataset)?

4. Methodology

Macroeconomic scenarios applied – 3 macroeconomic forecasts are discussed

Mitigating measures analysed include:

- equity injections via grants and subsidies (e.g. short-time work) (included in the simulations),

- long-term liquidity support via payment deferrals of more than three years (e.g. credit guarantees)

- and short-term liquidity support via payment deferrals of up to three years (e.g. social security contributions) (expected as not having effect on solvency in the simulations)

- Changes to the insolvency regime

Two corporate insolvency models considered: 1/ insolvency model without mitigating measures (under 3 macroeconomic scenarios) ; and 2/ insolvency model with mitigating measures (and under 3 macroeconomic scenarios)

COMMENT:

1/ There are a lot of assumptions regarding the input data (e.g. elasticities of industries with respect to turnover –refer to corporate finance literature to find more real elasticities); and the behavior of firms in making investment decisions; the model is static; the use of classical economic theory to develop the model, ignores the current evidence on the psychological aspects of investment decisions – the look at behavioral finance literature would add value to the paper.

2/ The model description considers both overindebtness (=insolvency, Equity <-30%) and illiquidity (Liquidity ratio below -10%). The paper title suggests the analysis of solvency. So what is in fact analysed?

5. Results.

Two basic conclusions of the main analysis:

1/ Monthly insolvency rates in simulations with mitigating measures are reduced in comparison to simulation without mitigating measures (as for the insovency model of 2020-12 forecast and 2021-06 forecast); but for the 2020-06 insolvency model, the rates are higher with the use of mitigating measures.

2/ Cumulative insolvecy rates in simulations with mitigating measures are reduced.

Analysis of sectoral impacts over time:

1/ The results focus on the solvency rates for the tourism industry in comparison to the whole sample of firms – all withour mitigating measures.

2/ They indicate in all three macroeconomic scenarios (2020-06, 2020-12; 2021-06) that the tourism industry experienced huge increase in insolvency rates (up to 30%); the average for the whole sample is up to 10%.

COMMENT:

1/ what is the effect of the implementation of mitigating measures on the industry solvency rate?

2/ how valid are your results in comparison with the real data?

5. Results – the disclaimers presented in the paper

The corporate insolvency model relies on several heroic assumptions:

- Balance sheets are static (no structural changes/no growth/no investments)

- No new firms are incorporated over the horizon of the projection.

- Balance-sheet and profit and loss statement breakdowns are drawn from the multivariate distribution, subitems reflect the relative size of the sectoral means.

- Asingle draw from the distribution determines how profitably a firm conducts its business over the entire projection horizon.

Elasticities are obtained in a crude manner, the firms' ability to reduce fixed costs – at an aggregate sector-specific or economy-wide level;

The link between solvency and liquidity is too mechanistic due to an oversimplified role banks play rolling over corporate credit.

This also restricts the mitigating measures that firms facing a liquidity crunch can take by themselves.

The effects of the mitigating measures are also subject to considerable uncertainty:

1/ They could be overestimated, since a quick payout of funds based on the eligibility criteria is assumed.

2/ The measures could reduce insolvencies more strongly than assumed due to possible impacts on GDP growth.

6. Conclusions

The papers benefits are twofold:

1/ This paper simulates insolvency rates of non-financial firms during the Covid-19 pandemic, considering three macroeconomic scenarios and two regulatory worlds (no- , with mitigating measures).

2/ The results generally show reduction in insolvency rates due to the use of mitigating measures.

However, the paper's data and methodology have several challenging features.

The fundamental drawbacks of the study lie in the application of very heoric assumptions (about balance-sheet, the incorporation of new firms, elasticities, etc.) and on the use of limited set of empirical data (the input variables are drawn from the multivariate distribution). The improvement of the methodology and dataset would definitely enhance the implications of this study.

Thank you for your attention!

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